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SHORT NOTE

Expanding the Distribution of the Remarkable Ant *Gnamptogenys vriesi* Brandão & Lattke (Formicidae: Ectatomminae): First Record From Brazil

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ABSTRACT

Gnamptogenys vriesi Brandão and Lattke is a rarely collected ant, which was originally described based on a worker and a dealated queen collected in Morona-Santiago province, Ecuador. After the original description, only a few specimens were collected in the Ecuadorian territory. In this paper, we report the first record of *G. vriesi* in Brazil, which results in a significant extension of its distribution previously considered restricted to Ecuador. In addition, we provide images and a distribution map for the species.

The ant genus *Gnamptogenys* Roger, 1863 is distributed worldwide, with about 140 valid species (Bolton, 2014; Feitosa, 2015) found from southern United States to northern Argentina and from Southeast Asia to northern Australia (Lattke, 2003; 2004; Lattke et al., 2007). They have relatively small colonies and can nest on the ground, in fallen rotten logs, or even in trees (Lattke, 1994; Lattke et al., 2008), and associated with epiphytes (Gobin et al., 1998; Delabie et al., 2010). Most species of *Gnamptogenys* are generalist predators, whereas several species may have varying degrees of specialization (Lattke, 1995; 2003; Brandão et al., 2009; Brandão et al., 2015), preying on a large diversity of arthropods, such as other ants, beetles and millipedes (Brown, 1993; Brandão et al., 2009; Brandão et al., 2015).

In *Gnamptogenys*, the *minuta*-group comprises nine species (*G. bufonis* (Mann, 1926), *G. caelata* Kempf 1967, *G. falcifera* Kempf 1967, *G. fieldi* Lattke 1990, *G. minuta* (Emery, 1896), *G. petiscapa* Lattke 1990, *G. simulans* (Emery, 1896), *G. striolata* (Borgmeier, 1957) and *G. vriesi* Brandão & Lattke 1990) distributed only in the Neotropics (Lattke, 1992). *Gnamptogenys vriesi* is a rarely collected species of the *minuta*-group (Lattke, 1992). Biological and behavioral traits of this species are still unknown, but the foveolae that covers its body surfaces are usually filled with earth, as found in *Basiceros* Schulz 1906 and *Stegomyrmex* Emery 1912, suggesting that the species presents cryptobiotic habits (Hölldobler & Wilson, 1986; Brandão & Lattke, 1990; Feitosa et al., 2008). Since the only known specimens of *Gnamptogenys vriesi* are a single worker (holotype) and one dealated queen (paratype) collected in Ecuador, the species has been considered endemic so far (Salazar et al., 2015). In this paper, we provide the first record of *G. vriesi* from Brazil.

A single worker of *G. vriesi* was collected by a pitfall trap in February, 2015, in a forest remnant in the municipality

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of Juara, state of Mato Grosso, Brazil (Fig 1). The municipality has an area of 22,666 Km² with 34,87% of its original area deforested (*Instituto Nacional de Pesquisas Espaciais*, 2015). According to the Köppen classification, the climate is tropical humid (Am) with an annual average temperature above 24°C and precipitation ranging from 2,800 to 3,100 mm year (Alvares et al., 2013). There are two well-defined seasons: a rainy season, which occurs between November and April; and a dry season, that occurs between May and October (Vicente et al., 2014). The region is characterized by the transition of Cerrado-Amazon areas (Avila & Kawashita-Ribeiro, 2011), and the predominant vegetation consists of Submontane Open Ombrophilous Forest, Submontane Dense Ombrophilous Forest and ecotonal areas between Seasonal Forest and Dense Ombrophilous Forest (*Instituto Brasileiro de Geografia e Estatística* 2004).

The single specimen of *G. vriesi* collected is deposited at the ant collection of the *Museu de Zoologia da Universidade de São Paulo* (MZSP). The specimen was compared to the holotype worker, and its identity was confirmed by specialists in the group (see acknowledgments). Both specimens (the newly collected and the holotype) were photographed using a Leica Application Suite V3 system, at the MZSP Hymenoptera Lab. The images were processed in Adobe Photoshop 7.0.

All measurements (in mm) were obtained under 60x magnification with a Leica MZ95 stereomicroscope. Abbreviations used throughout the text are: ML (mandible length): the straight line length of the mandible at full closure. HL (head length): the length of the head capsule excluding the mandibles, in full face view. WL (Weber's length): the diagonal length of mesosoma in profile. PL (petiole length): measured from anterior to posterior inflections of petiole node, in profile. GL (gaster length): the maximum length of gaster excluding sting in profile. TL (total length): the sum of ML, HL, WL, PL and GL.

Fig 1. Distribution map of *Gnamptogenys vriesi*.

Previous geographic distribution (holotype worker): HL 2.2, ML 1, WL 3.2, PL 1.2, GL 4.7, TL 12.3; Fig 2**):** Ecuador, Morona-Santiago province, Los Tayos, 03°08´S, 78°14´W, 03.vii.1976, Tjitte de Vries col. (worker and dealated queen deposited in MZSP).

New record (worker): HL 1.8, ML 1, WL 3.0, PL 0.9, GL 4.5, TL 11.2; Fig 2): Brazil, Mato Grosso State, Municipality of Juara, M1L1P7, 11°5'24.73"S 57°43'6.55"O, ii-2015, Santos R.C.L. col. (worker deposited in MZSP).

The specimen studied in this work presents the same diagnostic characters that define *G. vriesi* according to Brandão & Lattke (1990), such as WL>3,00mm; anterior border of clypeus concave; more than 20 ommatidia in the greatest diameter of eye; metanotal groove deep; and declivity of propodeum strongly impressed and concave. The worker collected in Brazil is morphologically similar, but the size is comparatively smaller (TL 11,2) than the holotype (TL 12,3); the coloration and sculpturing of the surface integument of the scape of antennae and legs are shiny and slightly darker; the anterior portion of the frontal lobe is weakly striate while in the holotype worker it is smooth; the region below the propodeal spiracles is smooth while in the holotype, this region is superficially foveolate.

This new record increases to 34, which is the number of *Gnamptogenys* species known from Brazil (Feitosa, 2015), and to 12, which is the number of species of the genus for Mato Grosso state (Economo & Guénard, 2015). As *G. vriesi* has only been collected to date in the Ecuadorian territory, this work extends the distribution of this species to more than 2,000 km. Therefore, the distribution of this species is much broader than was previously known. In fact, few inventories have been conducted between the extremes of the *G. vriesi* occurrence (e.g. Souza et al., 2015; Miranda et al., 2012).

Little is known about the distribution of most ant species due to the scarcity of inventories performed in most biomes (Brandão et al., 2008). In the Amazon, most of these inventories have been concentrated in the eastern and central regions (Vasconcelos et al., 2006; 2010; Oliveira et al. 2009; Bastos & Harada, 2011; Baccaro et al., 2012). Therefore, efforts should be made in the southern Amazon rainforest, as well as in Mato Grosso state, Brazil where the ant fauna is practically unknown (Vicente et al., 2011; 2012), and historically the region has faced strong pressure from the agricultural frontier and intensive anthropogenic disturbances.

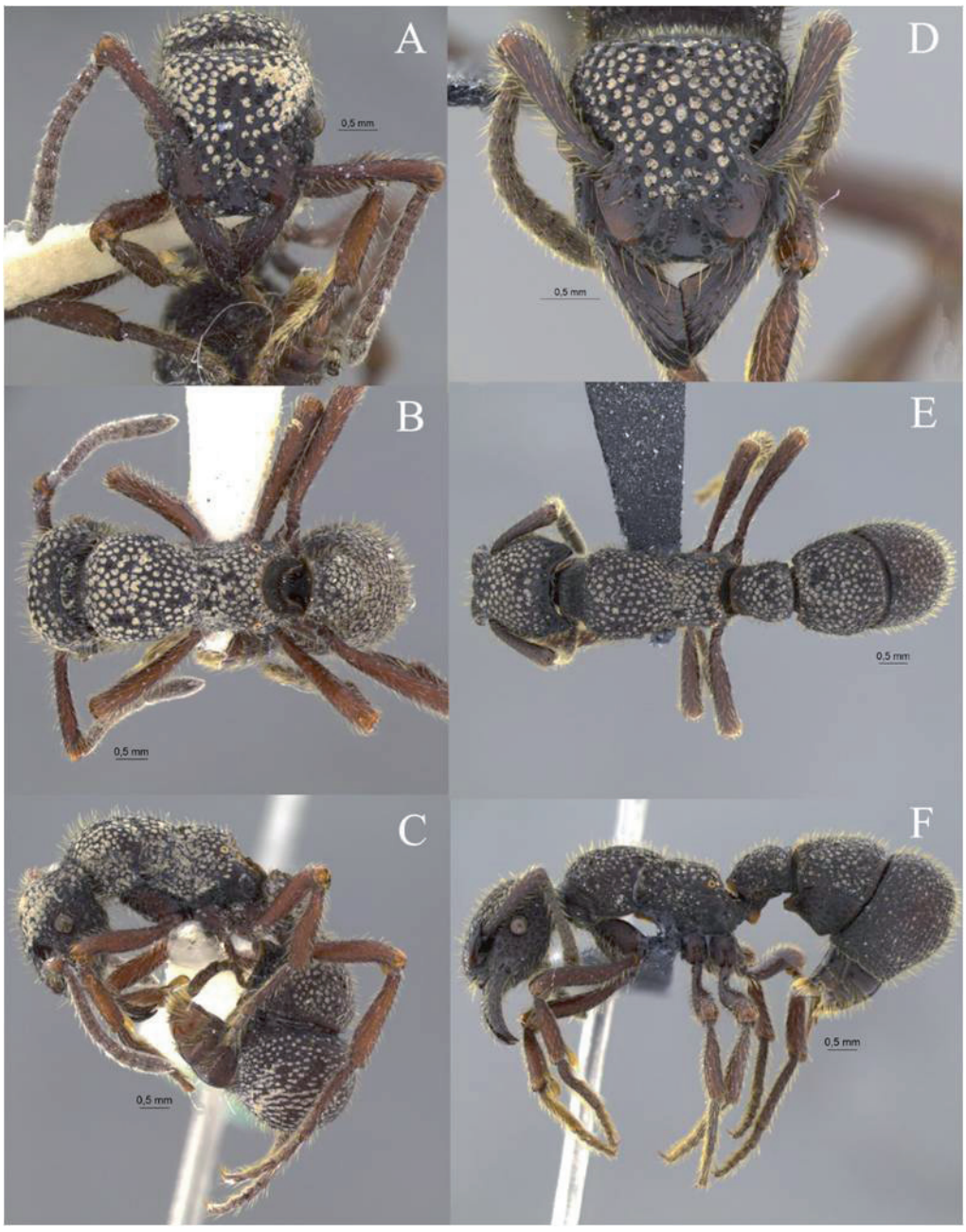

Fig 2. Holotype worker of *Gnamptogenys vriesi* in: full-face view (A), dorsal view (B) and lateral view (C); and newly collected worker in: full-face view (D), dorsal view (E) and lateral view (F).

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